# TED07 – (Part E11) Further Acid Deposition for HL

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. E.11.1 Describe the mechanism of acid deposition caused by the oxides of nitrogen and oxides of sulfur. (2)

*Formation of hydroxyl radicals:*

*H2O+O3* 🡪*2HO•+O2*

*OR… H2O +O•* 🡪 *2HO•*

*HO•+ NO2* 🡪 *HNO3*

*HO• + NO* 🡪*HNO2*

*HO• + SO2* 🡪 *HOSO2•*

*HOSO2• + O2* 🡪 *HO2•+ SO3*

*(SO3 + H2O* 🡪 *H2SO4)*

* 1. How are the hydroxide radicals formed?
  2. What is the equation for the production nitrous acid?
     1. Why does this material not remain?
  3. What is the equation for the production of nitric acid?
  4. What is the equation for the production of Sulfurous acid?
     1. Why does this material not remain?
  5. What is the equation for the production of Sufuric acid?

1. E.11.2 Explain the role of ammonia in acid deposition. (3)

*In the atmosphere, ammonia neutralizes the acids formed to a large extent, to form ammonium salts. Slightly acidic ammonium salts, (NH4)2SO4 and NH4NO3, formed in the atmosphere sink to the ground or are washed out of the atmosphere with rain. As NH4+ is deposited and enters the soil, nitrification and acidification can occur.*

*NH4+ + 2O2* 🡪 *2H+ + NO3- + H2O*

* 1. What is the origin of ammonia?
  2. How are ammonium salts formed, why are they harmful?
  3. Explain the process of the nitrification of soil including both steps by bacterium: